CLAIMS

1. A biometric identification device for identifying whether an object is a living eye or not, comprising:

a photographing part for photographing the object;

a light irradiation part for irradiating light to the object at an angle different from a photographing angle at which the photographing part photographs the object;

a partial light patch detection part for detecting a partial light patch on the object from an image photographed by the photographing part; and

an information output part for outputting information indicative of whether the object is a living eye or not based on whether the partial light patch detection part has detected a partial light patch from the object.

2. The biometric identification device of claim 1, wherein

the information output part outputs the information indicative of that the object is a living eye when the partial light patch detection part has detected a partial light patch on the object.

3. The biometric identification device of claim 2, wherein

the photographing part photographs a first image while the object is irradiated by the light irradiation part, and a second image while the object is not irradiated by the light irradiation

part; and

the partial light patch detection part compares the first image and the second image, thereby detecting the partial light patch on the object from the image photographed by the photographing part.

4. The biometric identification device of claim 2, wherein the light irradiation part comprises:

a plurality of irradiation parts for irradiating light to the object at angles different from the photographing angle at which the photographing part photographs the object;

a lighting on-off control part for controlling lighting on-off of the plurality of irradiation parts; and

a light patch position detection part for detecting a position of the partial light patch on the object detected by the partial light patch detection part, wherein

the photographing part photographs a plurality of images while the lighting on-off control part selectively turns on and off the plurality of irradiation parts, and

the information output part outputs information indicative of whether the object is a living eye or not based on positions of respective partial light patches of the plurality of images detected by the light patch position detection part.

5. The biometric identification device of claim 4, wherein

the information output part outputs information indicative of that the object is a living eye in a case where the plurality of images photographed while the lighting on-off control part selectively turns on and off the plurality of irradiation parts contain partial light patches at different positions from each other.

6. The biometric identification device of claim 2 further comprising a pupil area detection part for detecting a pupil area from the image photographed by the photographing part, and

the partial light patch detection part determines that the image contains a partial light patch in a case where the pupil area detected by the pupil area detection part is not substantially circular.

7. The biometric identification device of claim 3, wherein

the partial light patch detection part detects a partial light patch by comparing intensity histograms of the first image and the second image.

8. An authentication device provided with the biometric identification device of claim 1.

9. The authentication device of claim 8 comprising:

an authentication information formation part for forming

predetermined authentication information from the image photographed by the photographing part when the biometric identification device has determined that the object is a living eye;

a storage part for storing registered authentication information, which is previously registered; and

a comparison and collation part for comparing and collating the predetermined authentication information formed by the authentication information formation part and the registered authentication information stored in the storage part.

10. A biometric identification method comprising:

a first step of irradiating light to an object;

a second step of photographing an image of the object;

a third step of detecting a partial light patch from the image of the object; and

a fourth step of determining that the object is a living eye when a partial light patch on the object has been detected.

11. A biometric identification method comprising:

a first step of irradiating light to an object in a first direction;

a second step of photographing a first image of the object;

a third step of detecting a position of a first partial light patch from the first image;

a fourth step of irradiating light to the object in a second direction different from the first direction;

a fifth step of photographing a second image of the object;

a sixth step of detecting a position of a second partial light patch from the second image;

a seventh step of comparing the position of the first partial light patch and the position of the second partial light patch; and

an eighth step of determining that the object is a living eye when the position of the first partial light patch and the position of the second partial light patch are different from each other.